

USER INTERFACE

FIELD OF THE INVENTION

[0001] The invention relates to user interfaces, and relates especially to minimising the size of user interfaces.

BACKGROUND OF THE INVENTION

[0002] During the last two decades different types of small electronic input devices have been developed, especially for mobile telecommunication. These devices generally have a keypad comprising either a set of buttons typically used on a telephone handset or a small keyboard in the QWERTY format.

[0003] It is common in such electronic input devices to provide a display to let a user see information which has been entered via the keypad or keyboard and to provide the user with other information such as received messages, instructions or other information. Developments in electronic and battery technologies have allowed manufacture of ever smaller devices having ever greater functionality. This improvement in functionality has enabled users to interact with electronic input devices in more ways, which has led to more menu options being available. Consequently, electronic input devices generally require a relatively large display and a large number of input keys. It is now common for users to carry their electronic input devices with them most of the time. This increased mobility generally limits the size of electronic input devices to a handheld size. Furthermore, since they are now often carried about, they need to be robust. There is thus a conflict between the need to have a large display and a large keyboard to allow ease of use and the need to have a small portable electronic input device.

[0004] In order to keep the size of electronic input devices small, it is known to provide browsing menus to display only a small number of available options and/or information at any one time and to reduce the size of keyboard keys. However, user interfaces of newer and more complicated devices, such as mobile telephones and Personal Digital Assistants, often have a computer-like functionality, and so require a display which is capable of displaying text (having a number of rows) and graphics. QWERTY format keyboards are often provided. An example of such a device is the Nokia® 9000 Communicator. This is in the form of a two-part mobile station comprising a complete QWERTY format keyboard in one part and a display having 640×200 pixels in the other part. The two parts are joined together by a hinge.

SUMMARY OF THE INVENTION

[0005] Now a user interface for an electronic input device has been invented, which input device has an input means extractable from a storage space of the device into an extended state and retractable back into the storage space into a retracted state. Thus, the size of the data input device can conveniently be made smaller for transport whilst the input means is protected in the storage space. The electronic input device can subsequently be put into a larger size when the input means is to be used.

[0006] According to a first aspect of the invention there is provided an electronic input device comprising:

[0007] a flexible input means for receiving user input; and

[0008] a housing defining a space for accommodating said input means;

[0009] characterised in that

[0010] said input device has a first state and a second state; wherein

[0011] the input means adopts a compacted spatial configuration in the first state and adopts an extended spatial configuration in the second state.

[0012] Preferably, the input means has an input surface having touch sensitive areas.

[0013] Preferably, the compacted state is non-planar. All or part of the input means may adopt the compacted spatial configuration. In this way, a smaller input area, or no input area at all, is provided to the user.

[0014] Preferably, the extended spatial configuration is planar. All or part of the input means may adopt the extended spatial configuration. In this way, the input means provides an input area to a user.

[0015] Advantageously, the size of the electronic input device can be reduced, for example by gathering the input means either partially or entirely into the housing, and increased to reveal a convenient large input means, for example by letting out the input means either partially or entirely from the housing.

[0016] Preferably, in the second configuration the input means is wound into a roll. Alternatively, it may be folded. In one embodiment, it is a concertina arrangement.

[0017] Preferably, said device comprises means for moving said input means between said first and second configurations.

[0018] Preferably, said input means is a keyboard. In an embodiment in which the input means is a keyboard its size can be changed considerably thus allowing construction of a small device with full keyboard functionality. It is an advantage of a full keyboard that the user can quickly and easily type text, and yet the input device can be compacted to a convenient small size to be easy to carry with the user during transportation.

[0019] Preferably, said input means is a display. Preferably, part of the display is arranged to display a key to implement a soft key the function of which can be varied by software. This has an advantage of combining an input and output means so that the same surface can be used both for displaying information to the user and for reading user input, and thus it is not necessary to provide a separate display at all.

[0020] Preferably, the electronic input device comprises:

[0021] a flexible output means for outputting information; and

[0022] a housing defining a space for accommodating said output means;

[0023] characterised in that

[0024] said input device has a first state and a second state; wherein

[0025] the output means adopts a compacted spatial configuration in the first state and adopts an extended spatial configuration in the second state.